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September 25, 1998

Magalie Roman Salas  
Secretary  
Federal Communications Commission  
1919 M Street, NW Room 222  
Washington, DC 20554

Dear Ms. Salas:

Enclosed are the original and four (4) copies of the comments of GVNW Inc./Management in response to the Commission's Notice of Proposed Rulemaking in CC Docket No. 98-147. Also enclosed is one copy of our comments to be stamped and returned in the enclosed self addressed stamped envelope.

Any questions regarding this filing may be directed to me at (503) 612-4400.

Sincerely,

Jeffrey H. Smith

cc:

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SEP 25 1998

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Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D C 20554

In the Matter of )  
 )  
Deployment of Wireline Services Offering ) CC Docket No. 98-147  
Advanced Telecommunications Capability )

**COMMENTS OF GVNW INC./MANAGEMENT**

**A. Introduction**

GVNW Inc./Management (GVNW) is a management consulting firm which provides financial and regulatory consulting services to independent telephone companies. These comments focus on the impact that the issues raised in the Notice of Proposed Rulemaking (NPRM) may have on small LECs and, ultimately, on the provision of advanced telecommunications capability throughout rural America.

We are pleased that the Commission is addressing the challenges we face with respect to widespread deployment of advanced telecommunications capability (ATC or ATS) for all Americans. We believe that the deployment of advanced telecommunications capability to rural Americans will require a different set of regulatory parameters. Our initial comments will set forth the reasons why we believe this to be the case. We have organized our comments in the order of the Commission's NPRM.

SUMMARY of GVNW comments:

1. The current regulatory scheme of requiring unbundled resale at rates that guarantee competitors a profit is a strong disincentive, if not deterrent, to any investment in advanced telecommunications capability, at least in the rural markets. Was the intent of Congress to place the entire burden and risk on rural incumbent local exchange carriers? We believe that is not the case.
2. If a state has granted a Section 251(f) waiver, a rural LEC may offer ATS without the creation of a separate affiliate.
3. If the Commission is truly committed to seeing accelerated deployment of ATS in all regions of the country, we recommend that companies eligible under Section 251 (f) be exempt from resale and interconnection requirements for advanced telecommunications capability and services for a period of 3 years
4. The Commission's proposal effectively discourages investment by, in many cases, the only provider that the rural customer will have for the foreseeable future.
5. We should not assume that there will be someone available to serve the advanced telecommunications needs of all citizens.
6. The FCC should exercise considerable caution when allowing any carrier to deviate from safety or performance standards generally accepted in the telecommunications industry.
7. In attempting to resolve this issue, the FCC will incur substantial cost to either attempt to promulgate detailed regulations in time of rapid technological change, or to hear each complaint on a case-specific basis. The FCC must look at the cost-benefit, and decide if regulation at such a fine level is necessary. We submit that regulation at such a detailed level is not warranted either by the nature of the problem, or the benefit to the end user.
8. The FCC should refrain from ordering incumbent LECs to provide collocation information to competitors that are not certified by the appropriate state regulatory body.
9. There must be one entity in control of the deployment of loop electronics on the cable plant that can resolve conflicts to prevent loss of service to customers.
10. Ordering small ILECs to conform to an RBOC based national standard would result in greatly increased costs to the customers of the small ILECs.

## **B. Provision of Advanced Services through a Separate Affiliate**

The Commission's proposed approach for structural options for deploying advanced services is a huge disincentive in rural areas. In the discussion at paragraph 98, the Commission "*seek(s) comment on whether the same separation requirements should apply to all advanced services affiliates for them to be deemed not incumbent LECs, regardless of the size of the associated incumbent LECs.*"

From the rural ILEC perspective, this brings into play the context and applicability of Section 251(f). Since the potential exemption to be garnered under the 251(f) mechanism is not predicated based on a separate affiliate being created, the relevant question may be posed as: Should small rural LECs be allowed to offer ATS without structural separation since they are likely to be able to gain such permission under 251(f) regardless? We recommend the answer be no less than: If a state has granted a Section 251(f) waiver, a rural LEC may offer ATS without the creation of a separate affiliate.

If the Commission is truly committed to seeing accelerated deployment of ATS in all regions of the country, including rural America, then serious consideration should be given to an approach similar to the Commission's course of action in the *Computer III* proceeding<sup>1</sup>. We recommend that companies eligible under Section 251 (f) be exempt from resale and interconnection requirements for advanced telecommunications capability and services for a period of 3 years.

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<sup>1</sup> With *Computer III*, the FCC permitted select carriers to provide enhanced services on an **integrated** basis, subject to **non-structural** accounting and interconnection safeguards.

Specific problems with Commission "circumstances" in rural markets

The Commission's proposed circumstances at paragraph 96 are particularly problematic for rural applications. While the Commission may seek to prevent certain behaviors from occurring in the large, densely populated urban markets, imposing the identical parameters for rural markets will be an effective deterrent to ATS deployment. In a September 7 article in Cablevision magazine<sup>2</sup>, an analysis is offered as to an ILECs ability to fully participate in ATS: *"Right now, telcos must comply with a complex gaggle of rules requiring any new capacity related to such buildouts be made available to competitors at cost, an obvious disincentive to build anything."*

The first condition, that the incumbent must "operate independently" from its affiliate, appears to ignore the rules that are already in place. The Commission's proposal effectively discourages investment by, in many cases, the only provider that the rural customer will have for the foreseeable future. The Commission apparently views such ILEC diversification as anti-competitive, ignoring its own Part 64 Rules that provide for accounting safeguards.

The fourth condition, that pertaining to "separate officers, directors, and employees", is at best appropriate for large price cap companies, but certainly not for smaller carriers. Such a recommendation is indicative that the cornerstone of the instant proposal from the Commission with respect to ATS is the Telecommunications Act's "two-pipe policy" assumption. However, rural America remains predominantly a "one-pipe world" for at least the near term. Any Commission rulings based on the premise that

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<sup>2</sup> Cablevision, September 7, 1998, "High-Speed Honeymoon on the Rocks?", page 32.

competition and universal availability are compatible will most likely prove flawed. While the Act calls for both of these public policy goals to be achieved, the Commission is left with the very difficult task of overseeing directly contradictory objectives. The end result? The end result of such an approach is that the allure of the presence of competition is given precedence over rural customer needs for services mandated by the Telecommunications Act. Rural customers are "put on hold" and will continue to wait for the promised benefits of "competition", unlikely to occur anytime soon in the sparsely populated markets.

The fifth condition related to restricting financing does not recognize a basic fundamental of providing ATS in rural America. Rural markets are generally less profitable. Without the ability to access an ILECs financing options, it will simply not be possible to invest in ATS in rural America. Less profitable markets will require additional incentives and perhaps additional regulation. **We should not assume that there will be someone available to serve the advanced telecommunications needs of all citizens.**

We believe the largest challenge, at least for many rural service areas, is economic. As we stated in our comments in the companion NOI (CC Docket No. 98-146), many rural areas are one provider territory for advanced telecommunications services, even with some form of universal service support. Current pricing of equipment is greater than can be justified in deployments of small scale that will be required in rural areas. The price of leased transport is such that it is not economical to deploy a central head end for multiple service locations to realize economies of scale. Transport of video requires large

bandwidth, for which current transport rates are uneconomical given the small demand associated with rural applications.

### **C. Measures to Promote Competition in the Local Market**

#### **1. Collocation Requirements**

##### **c. Collocation Equipment**

With respect to paragraph 134, the FCC should exercise considerable caution when allowing any carrier to deviate from safety or performance standards generally accepted in the telecommunications industry. In many cases, state and local electric codes, fire codes, and building codes may establish certain requirements that must be adhered to in the interest of public safety and welfare. For example, the State of Illinois has adopted a very comprehensive fire protection code for telecommunications facilities in the wake of service interruption caused by the fire in the Hinsdale, IL central office several years ago. Similar requirements are not in effect in some other states. Thus, ILEC requirements will differ based on locality. Any rules and regulations promulgated by the FCC must allow for local regulations.

##### **d. Allocation of Space**

#### **Cageless Collocation Costs are significant in rural settings**

With respect to paragraph 141, allowing cageless collocation will require a sophisticated security system that can both control access and record the time and who accessed a facility for all incidents of access. While such systems are currently in place in many large urban offices, small rural ILECs have not deployed such systems because there

is currently no need. The cost per customer of such security systems is not trivial for customers of small ILECs.

The Commission asks what steps could be taken to reduce the cost of collocation to the competitor. However, this is only one of two questions that need to be asked. Under the FCC proposals, there is a real cost to the ILEC to introduce the necessary modifications to allow for competition. In the case of small ILECs, the cost per customer can be significant. The second question that the FCC must also ask in this proceeding is how to spread the cost incurred by the ILEC to implement competition fairly over all users of telecommunications to prevent the cost from being borne solely by the ILEC's existing customers.

How much space is really available? Not as much as you might think.

At paragraph 142, the Commission asks commenters *"to address whether we can and should require incumbent LECs to remove obsolete equipment . . . to increase the amount of space available for collocation."* In defining spare space in central offices, the FCC should consider what has happened to the space within ILEC central office buildings over the last few years. When the small LECs replaced electromechanical switches with digital switches, a significant amount of central office space was freed up. However, over the last 10 years, many small ILECs have used most of this space for such equipment as fiber optic terminals, equipment to provide for special access, and Internet equipment. What was spare for a brief period of time is now fully utilized in many cases. Thus, it is difficult to say any space is available. Allowing all competitors to use any spare space will



result in the ILEC, as the building owner, having to build an addition to the building at an earlier date than would be required if only the ILEC located its equipment in the building. This is a cost of introducing competition that the FCC should allocate over the customers of all competitors, not only the customers of the ILEC.

Defining "obsolete" is problematic in light of technology and market differences

In this section, the FCC also asks for comments on a proposal that the ILEC be required to remove "obsolete equipment" from its buildings to allow more space for competitors' equipment. The definition of "obsolete" differs by location, customer base, and ILEC. For example, a DS-1 non-SONET compliant fiber optic terminal would be obsolete in an urban environment, but would serve adequately to provide light route transport in rural areas.

How does the FCC propose to determine which equipment is obsolete? Due to differences in the definition of "obsolete" based on location and application, it is not possible to issue lists of what is obsolete, even if the FCC had the resources to compile and keep current such a list. Thus, in many cases, this becomes a contest between parties of just what is "obsolete". In attempting to resolve this issue, the FCC will incur substantial cost to either attempt to promulgate detailed regulations in time of rapid technological change, or to hear each complaint on a case-specific basis. The FCC must look at the cost-benefit, and decide if regulation at such a fine level is necessary. We submit that regulation at such a detailed level is not warranted either by the nature of the problem, or the benefit to the end user. In addition, the uncertainty created until the details are worked out will deter competition.

Certification is necessary to mitigate frivolous requests

The FCC should refrain from ordering incumbent LECs to provide collocation information to competitors that are not certified by the appropriate state regulatory body. If such an order were issued, there would be no protection for the ILEC from frivolous or trivial requests, with the cost of responding to these requests being borne by the ILEC's customers. The States are charged with the responsibility of determining who is qualified to provide telecommunications service through a certification process.<sup>3</sup> The States have the authority to determine what the certification of telecommunications providers enables those providers to do. The FCC may be infringing on the authority that belongs to the States if it orders the ILEC to perform certain functions for non-certified competitors.

2. Local Loop Requirements

d. Loops and Operations Support Systems

The FCC considers here that the competitor should determine what technology would work on a given loop based on the ILEC's cable plant information.<sup>4</sup> There is a significant danger in ordering such an arrangement in that there are many technologies that deliver Advanced Telecommunications Services that are mutually incompatible. For example, based on field trials by GVNW clients, Discrete Multi-Tone (DMT) ADSL modems will render inoperable T-1 circuits, Digital Added Main Line (DAML) subscriber

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<sup>3</sup> The certification process is working quite well. A recent survey by State Telephone Regulation Report found there are more CLECs (1429) holding certificates issued by state commissions than ILECs (1332) providing local telephone service.

<sup>4</sup> The Commission should focus its attention to seeing that minimum service standards for CLECs be achieved for outages, repair response, customer interfaces, and billing accuracy and correction. This will preclude deployment of sub-standard systems that are built to obtain support. Minimum service standards are required to prevent this from happening in deployment of ATS.

carriers, and SDSL circuits in the same cable binder group. The addition of an ADSL circuit to serve one customer could remove service from many other customers, especially if the T-1 circuits served Digital Loop Carriers

For this reason, there must be one entity in control of the deployment of loop electronics on the cable plant that can resolve conflicts to prevent loss of service to customers.<sup>5</sup> Sufficient protection can be provided for competitors by requiring that the ILEC provide cable pairs for ADS technology to competitors on the same basis as it provides pairs to itself, **either as a regulated ILEC** or through an unregulated ADS affiliate.

#### Confiscation Issues

The FCC should consider the technical, business, and legal realities of providing advanced service on existing cable plant in rural settings before allowing all parties to place service on the plant with no control. If the FCC places the ILEC in the position of no longer having the ability to control the quality of service on the plant it owns, the FCC is in effect removing control of that asset from the ILEC. Removal of control, plus contemplation in other proceedings of plans that require the ILEC to sell the local loop at a price below cost, begin to look as if the FCC is treating the cable plant as a publicly owned resource, rather than the property of the ILEC. This raises issues of illegal taking of property without compensation.<sup>6</sup>

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<sup>5</sup> The competitor would have incentive only to serve its customer, and would not have any business incentive to protect existing subscribers of the ILEC. Indeed, there might be an incentive on the part of the competitor to provide the ILEC's customers with poor service so that more customers will consider the competitor.

<sup>6</sup> The unrecovered embedded costs of investment in a company's network facilities are real costs that will continue to be borne by the LECs. If LECs are not permitted to recover these costs, such actions would be confiscatory and subject to review under the Takings Clause. Established precedent in this regard may be found in Duquesne Light Co. v. Barasch, 488 U.S. 299, 308-10 (1989); and FPC v. Hope Natural Gas Co.,

Ordering small ILECs to conform to an RBOC based national standard would result in greatly increased costs to the customers of the small ILECs

In ordering access by competitors to cable records, the FCC must consider that the small ILECs often use paper records, and will not be able to provide electronic access in the same manner as RBOCs. Forcing the small ILECs to offer electronic cable plant records using the same technology as the RBOCs by ordering a national standard based on RBOC technology will require small ILECs to purchase systems designed to handle millions of cable pairs. These systems are often not scaleable, so the cost of providing the system for a thousand cable pairs using this technology is not economical. This is a very real and very significant cost to the ILEC to introduce competition. If this cost is spread over only a relatively few customers, as would be the case with small ILECs, the cost per customer can be large. The FCC should consider the cost-benefit to the end customers in all such cases. The FCC should not order a national standard based on RBOC technology for OSS interfaces that applies to small ILECs.

e. Loop Spectrum Management

A national standard for spectrum management is a detriment to introduction of advanced services, especially in rural areas

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320 U.S. 591, 602 (1944). Any changes to access rates that result in revenues that do not recover total costs associated with past investment decisions reviewed by regulators do not comport to the intent of the Communications Act of 1996. Any Commission decisions to prevent a LEC from a compensatory return would violate the LEC's due process under the law and undermine its legitimate, investment-backed expectations. Such interference with (LEC) property rights in a manner that undermines such expectations constitutes a taking as found in Penn Central Transp. Co. v. New York City, 438 U.S. 104, 124 (1978).

As the FCC considers a national standard for spectrum management on cable plant loops, we offer the following for consideration. GVNW considers such a standard to be a detriment to introduction of advanced services, especially in rural areas. The standard will always lag development of technology. Requiring new technology to wait for the standard to catch up will delay its introduction. Based on recent experience, standards are promulgated slowly. For example, even though SONET fiber optic transport technology was introduced in the early 1990's, the full SONET standard that allows end-to-end compatibility of all vendor's equipment is still not in place. The full ATM data switching standard is likewise not yet complete, even though ATM was introduced about the same time as SONET.

Standards, in order to accommodate all vendors and providers, often seek a "lowest common denominator" approach out of necessity.<sup>7</sup> Features that might be desired by the customers could be held back if the industry has to wait for the standard. A better approach would be to adopt a strategy that calls for the ILEC and competitor to jointly "test and see". This would allow both ILECs and competitors to introduce new, more feature rich technology on a more rapid schedule.<sup>8</sup>

#### h. Unbundling Loops Passing through Remote Terminals

At this point, the Commission addresses loops provided over Digital Loop Carrier (DLCs). The NPRM does not mention, and may not have contemplated, that many small

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<sup>7</sup> For example, the GR-303 standard, which allows for interconnection of any DLC to any switch, includes far fewer features than vendor specific applications of the same technology.

<sup>8</sup> Rules should be as general as possible, so as to allow for maximum innovation and deployment with minimal changes to the rules.

LECs use remote switches rather than DLCs for loop aggregation. In many cases, these remote switches are more economical than DLCs in rural applications.

However, there is a significant difference in operation between DLCs and remote switches. DLCs are separate equipment that is not under the control of the switch. They simply provide a path between the switch and the customer. The remote switch, on the other hand, places the switch line circuit in the remote location. Remotes basically deliver switch line circuit functions only (POTS, coin, and in some cases ISDN BRI). There is no capability to transport channels from the remote to anywhere but the host switch fabric. Thus, the remote switch, especially in the small sizes used by small LECs, does not offer additional channels for special circuits to carry DSL data traffic. At this time, if a competitor ordered a DSL circuit at a customer served by a remote, the ILEC would have to provision a separate path to the host switch using separate channels from those used for host-remote transport. This could require additions to transport capacity, and require the competitor to place equipment at both the host switch and the remote that would not be required with many DLCs currently on the market. The FCC should make an allowance for the different technology base of the small ILECs, and not assume that all customers not served from the switch are served from DLCs, as the NPRM suggests.

The FCC should also consider that there are several different designs used to build cable plant. DSL technology fits best on a technology known as "dedicated plant", where cable pairs are dedicated to each customer. Unfortunately, this is the most expensive way to build cable plant, and is not ubiquitous. In order to economize, LECs have used other schemes, such a dedicated distribution with semi-random access to feeder cable, under

such names as "serving area concept". These designs can be converted to DSL relatively inexpensively by removing load coils and bridge tap. However, there are still some earlier designs, where all cable pairs in a cable can be accessed at each customer. Such designs are called "ready access". In these designs, it is often not possible to remove bridge taps economically so that DSLs can work. The cost to upgrade "ready access" designed plant to "serving area concept" can be significant. Any rules promulgated in this area must allow for the different network that exists with small ILECs.

Competitive ILEC access to remote terminals may pose significant technical problems

In order to guarantee the quality of service, the ILEC must be able to control access to its cable plant. As stated earlier, the ILEC is the only party that has a business interest in protecting service to all customers, including those of the competitor, not just its own customers.

Additionally, the small ILECs use different technology than the large ILECs. Competitor's personnel may not have training on technology used by the small ILEC, and could cause significant service degradation through ignorance of the technology they were working with. In addition, access to cables at locations other than the central office often requires that technicians follow complicated sets of engineering directions, such as cable splicing cut sheets. Performing one step out of sequence can result in service interruption to many customers, especially where cables carry T-1 circuits serving multiple customers from DLCs or remote switches. A technician not familiar with the methods of operation used by the small ILEC could thus cause significant service problems. As discussed above with types of cable plant design, there are substantial differences between ILECs in

methods of operation for engineering, for maintaining cables, DLCs and remote switches, and for performing cable splices.

The risk caused by possible threat to service to all customers is not outweighed by the reward the competitor would reap only for its customers if the competitor were allowed access to the ILEC's cable plant or field equipment.

#### **D. Unbundling Obligations Under Section 251(c)(3)**

The requirement that small LECs provide services to competitors that they do not offer to their customers will add significantly to the cost of local service in areas served by small LECs.<sup>9</sup> For example, a time domain reflectometer (TDR), an item of test equipment used to discover cable faults, can cost up to \$20,000. Other test equipment such as that used to determine the suitability of a cable pair for DSL can cost in the same range. A small company may not have such equipment if it does not offer advanced services, such as DSL.

Unless this cost is supported by an explicit mechanism, the small LEC would be forced to either charge the competitor the cost of the test equipment and labor to test the pairs as part of the installation, or raise the price of local telephone service. A large installation fee will deter the introduction of competition, especially in rural areas where there is no business case for the competitor to pay \$20,000 to serve only a few customers.

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<sup>9</sup> The FCC states that the ILEC must show that it is "not technically feasible" to provide DSLs. As in most cases, practically anything is "technically feasible" given enough money. But who is going to pay the bill? Using the FCC's criteria of technically feasible, the small ILEC might be required to spend substantial money to serve one DSL at a customer served from a remote switch, or to rebuild ready access plant to work with DSL technology. The FCC must consider the cost/benefit to the ILEC's customers for the cost of introducing competition. Where this cost is spread over a few customers of the small ILEC, it can be significant.



Raising local rates of all ILEC customers, so some can be served by a competitor, raises serious issues of fairness between classes of customers that are placed in this situation simply because of the geographic location of where they live or work. If the FCC continues to require the small LECs to offer services to competitors even if they do not offer these services to their own customers, the FCC should provide financial support to the small ILECs to implement this policy.<sup>10</sup>

This is already occurring. Attachment 1 shows a case history of a small ILEC GVNW client who experienced such a situation recently.

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<sup>10</sup> The FCC cites Section 251(c)(3) that requires "non-discriminatory access to network elements on an unbundled basis at any technically feasible point". GVNW submits the key word here in "non-discriminatory". The ILEC should be required to offer to competitors those elements it offers to its **end users as an ILEC**, or to its affiliates only. By requiring that the ILEC offer products to competitors that it does not offer itself requires "better than" access, not "non-discriminatory" access.

## CONCLUSION

It appears clear that a primary objective of the Commission in these proceedings is to incent competition in the provision of advanced telecommunications capability. However, it is also clear that competition will emerge unevenly among geographic areas, services, and customer classes. As shown in the recent NTIA report<sup>11</sup>, for many Americans access to the information superhighway is still beyond their grasp.

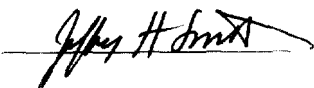
We question whether mandating competition at any cost was the Congressional intent for rural areas of the country. At least for rural LEC customers, access to advanced telecommunications capability and reasonably priced services will come from the ILEC, if at all. To achieve this Congressionally-mandated capability, the Commission must recognize the differences between urban and rural markets. It is only by recognizing these differences that the Commission will enable the development of affordable advanced telecommunications services to rural Americans.

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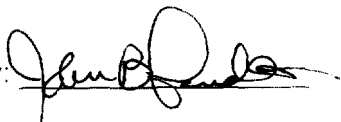
<sup>11</sup> Falling Through the Net II New Data on the Digital Divide, NTIA.

Respectfully submitted

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**Exhibit 1 - Case History**

**Cost of Sophisticated Tests Significant to Customers of Small ILECs**

A GVNW client, a small ILEC which serves approximately 1,200 customers, was asked to test a service in a manner that was not normally used in providing service to its customers. Additional costs were incurred that were borne by the small ILEC. This exhibit illustrates that the costs that will be incurred by a small ILEC if the FCC requires it to provide services to competitors that it does not provide to its customers are not trivial.

A major IXC ordered a 56 Kbps data circuit from the small ILEC. This circuit was provided to a Federal Aviation Administration (FAA) air traffic control remote radio site located within the small ILEC's service area. The IXC had been awarded the FAA contract for the data circuits that were previously provided by another carrier. A similar circuit was already in place for the previous carrier.

The small ILEC's technician visited the FAA site on the targeted in service date to test the circuit, and place it into service. The IXC's technicians assisted on the far end of the circuit. The small ILEC used their 1000 Hz generator-receiver test unit that was used to perform transmission loss tests on the small ILEC's loops, and had been adequate for testing on previous data circuits of the same type. The IXC tested the circuit with the small ILEC technician using the small ILEC's test unit. The circuit passed that test. However, the IXC would not accept the circuit, because the small ILEC did not have the capability to perform transmission loss tests at multiple frequencies. The requirements for testing were greater than the small ILEC could provide using the test equipment that the small ILEC had previously found adequate to test all services that it offered.

The small ILEC's network supervisor called GVNW to see if we could locate a multiple frequency generator-receiver for loan. After considerable effort, we were unable to locate the proper equipment to borrow and consideration was given to a purchase. We found that the required test unit cost approximately \$7,000. The test equipment would have very limited use in the small ILEC's ongoing business, as its sophisticated capabilities were not necessary to assure that the service that the small ILEC's customers purchased was being provided in a proper manner.

Before recommending that the small ILEC client purchase the test equipment, we suggested a call to the FAA to see if their technician had any comments about why the IXC would not accept the circuit. The FAA technician indicated that he had the equipment necessary to make all the frequency tests the IXC required, and volunteered to travel to the site from his work location in a large city about 150 miles away. All the tests met with the IXC's approval, and the circuit was turned up.

Because the small ILEC did not have test equipment to perform tests that were not required by it in the normal course of business, the in-service date of the requested circuit was almost one month late. The FAA technician was required to travel from his work location to test the circuit. The FAA chose not to charge the small ILEC for the labor and equipment required to perform the required tests. The small ILEC technician was required to make two additional trips to the remote FAA site. GVNW's services were required to resolve the issues. Total labor costs for the ILEC technician's additional trips to site and GVNW were approximately \$900.

The small ILEC was able to provide the circuit without spending the approximately \$5.80 per customer to purchase the test equipment required to perform the appropriate tests. This was due to the technical sophistication of the end user and the willingness of the end user to assist in the testing of the circuit. The small ILEC did incur costs to arrive at a solution, however. In this case, because this circuit was an interstate circuit, these costs were added to the NECA revenue requirement.

This example shows that the cost per customer to perform sophisticated tests is not trivial to customers served by small ILECs. Unless there is some mechanism to recover these costs, as there was in this case, the small ILEC could be forced to raise the price of telephone service to its customers to pay for the costs incurred for the introduction of new services and competition into the small ILEC's service area.